

*Cyanea macrostegia* ssp. *gibsonii*  
(Haha)

**5-Year Review  
Summary and Evaluation**

**U.S. Fish and Wildlife Service  
Pacific Islands Fish and Wildlife Office  
Honolulu, Hawaii**

## 5-YEAR REVIEW

Species reviewed: *Cyanea macrostegia* ssp. *gibsonii* (Haha)

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**5-YEAR REVIEW**  
***Cyanea macrostegia* ssp. *gibsonii* (Haha)**

**1.0 GENERAL INFORMATION**

**1.1 Reviewers**

**Lead Regional Office:**

Region 1, Jesse D'Elia, Chief, Division of Recovery, (503) 231-2071.

**Lead Field Office:**

Pacific Islands Fish and Wildlife Office, Gina Shultz, Assistant Field Supervisor for Endangered Species, (808) 792-9400.

**Cooperating Field Office(s):**

N/A

**Cooperating Regional Office(s):**

N/A

**1.2 Methodology used to complete the review:**

This review was conducted by staff of the Pacific Islands Fish and Wildlife Office (PIFWO) of the U.S. Fish and Wildlife Service (USFWS) between June 2006 and June 2007. The National Tropical Botanical Garden provided most of the updated information on the current status of *Cyanea macrostegia* ssp. *gibsonii*. They also provided recommendations for conservation actions that may be needed prior to the next five-year review. The evaluation of the lead PIFWO biologist was reviewed by the Plant Recovery Coordinator. These comments were incorporated into the draft five-year review. The document was then reviewed by the Recovery Program Leader and the Assistant Field Supervisor for Endangered Species before final approval.

**1.3 Background:**

**1.3.1 FR Notice citation announcing initiation of this review:**

USFWS. 2006. Endangered and threatened wildlife and plants; initiation of 5-year reviews of 70 species in Idaho, Oregon, Washington, Hawaii, and Guam. Federal Register 71(69):18345-18348.

### 1.3.2 Listing history

#### Original Listing

**FR notice:** USFWS. 1991. Endangered and threatened wildlife and plants; determination of endangered status for six plants from the island of Lanai, Hawaii. Federal Register 56 (183):47686-47695.

**Date listed:** September 20, 1991.

**Entity listed:** Subspecies

**Classification:** Endangered

#### Revised Listing, if applicable

**FR notice:** N/A

**Date listed:** N/A

**Entity listed:** N/A

**Classification:** N/A

### 1.3.3 Associated rulemakings:

USFWS. 2003. Endangered and threatened wildlife and plants; final designation of critical habitat for three plant species from the island of Lanai, Hawaii. Federal Register 68 (6):1220-1274.

Critical habitat was proposed but not designated for this species on Lanai because we believed there was a higher likelihood of beneficial conservation activities occurring on this private land without the designation of critical habitat than there would be with a critical habitat designation. In addition, exclusion of the private land on Lanai that had been proposed as critical habitat would not lead to the extinction of the species (USFWS 2003).

### 1.3.4 Review History:

Species status review [FY 2007 Recovery Data Call (September 2006)]:  
Declining

#### **Recovery achieved:**

1 (0-25%) (FY 2006 Recovery Data Call)

### 1.3.5 Species' Recovery Priority Number at start of this 5-year review:

6

### 1.3.6 Current Recovery Plan or Outline

**Name of plan or outline:** Lana'i plant cluster recovery plan. 1994. U.S. Fish and Wildlife Service. Portland, OR. 138 pages.

**Date issued:** September 1995

**Dates of previous revisions, if applicable:** N/A

**2.0 REVIEW ANALYSIS**

**2.1 Application of the 1996 Distinct Population Segment (DPS) policy**

**2.1.1 Is the species under review a vertebrate?**

*Yes*  
 *No*

**2.1.2 Is the species under review listed as a DPS?**

*Yes*  
 *No*

**2.1.3 Was the DPS listed prior to 1996?**

*Yes*  
 *No*

**2.1.3.1 Prior to this 5-year review, was the DPS classification reviewed to ensure it meets the 1996 policy standards?**

*Yes*  
 *No*

**2.1.3.2 Does the DPS listing meet the discreteness and significance elements of the 1996 DPS policy?**

*Yes*  
 *No*

**2.1.4 Is there relevant new information for this species regarding the application of the DPS policy?**

*Yes*  
 *No*

**2.2 Recovery Criteria**

**2.2.1 Does the species have a final, approved recovery plan containing objective, measurable criteria?**

*Yes*  
 *No*

**2.2.2 Adequacy of recovery criteria.**

**2.2.2.1 Do the recovery criteria reflect the best available and most up-to date information on the biology of the species and its habitat?**

*Yes*  
 *No*

**2.2.2.2 Are all of the 5 listing factors that are relevant to the species addressed in the recovery?**

  X   Yes  
      No

**2.2.3 List the recovery criteria as they appear in the recovery plan, and discuss how each criterion has or has not been met, citing information:**

A synthesis of the threats (Factors A, C, D, and E) affecting this species is presented in section 2.4. Factor B (overutilization for commercial, recreational, scientific, or educational purposes) is not considered a threat to this species.

Stabilizing, downlisting, and delisting objectives are provided in the Lanai plant cluster recovery plan (USFWS 1995), based on whether the species is an annual, a short-lived perennial (fewer than 10 years), or a long-lived perennial. In order for *Cyanea macrostegia* ssp. *gibsonii*, a long-lived perennial, to be considered stable, existing populations must be managed to control threats (*e.g.*, fenced) and be represented in an *ex situ* (off-site) collection. In addition, a minimum of total of three populations should be documented on Lanai. Each of these populations must be naturally reproducing and increasing in number, with a minimum of 25 mature individuals per population.

This recovery objective has not been met.

For downlisting, a total of five to seven populations of *Cyanea macrostegia* ssp. *gibsonii* should be documented, each population with a minimum of 100 mature reproductive individuals. Each of these populations must be naturally reproducing, stable, or increasing in number, and secure from threats. Each population should persist at this level for a minimum of five consecutive years before downlisting is considered (USFWS 1995).

This recovery objective has not been met.

For delisting, a total of eight to ten populations of *Cyanea macrostegia* ssp. *gibsonii* should be documented on Lanai. Each of these populations must be naturally reproducing, stable, or increasing in number, and secure from threats, with a minimum of 100 mature individuals per population. Each population should persist at this level for a minimum of five consecutive years before delisting is considered (USFWS 1995).

This recovery objective has not been met.

**2.3 Updated Information and Current Species Status**

In addition to the status summary table below, information on the species' status and threats was included in the final critical habitat rule referenced above in

section I.C.5 (“Associated Rulemakings”) and in section II.D (“Synthesis”) below, which also includes any new information about the status and threats of the species.

**Status of *Cyanea macrostegia* ssp. *gibsonii* from listing through 5-year review.**

<b>Date</b>	<b>No. wild inds</b>	<b>No. outplanted</b>	<b>Stability Criteria</b>	<b>Stability Criteria Completed?</b>
1991 – listing	1	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 25 mature individuals each	No
1995 – recovery plan	75-80		All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 25 mature individuals each	No
2003 – critical habitat	74	Unknown	All threats managed in all 3 populations	No
			Complete genetic storage	Unknown
			3 populations with 25 mature individuals each	Unknown
2007 – 5-yr review	14-24	0	All threats managed all 3 populations	No
			Complete genetic storage	No
			3 pops with 25 mature individuals each	No

**2.3.1 Biology and Habitat**

**2.3.1.1 New information on the species’ biology and life history:**

**2.3.1.2 Abundance, population trends (e.g. increasing, decreasing, stable), demographic features (e.g., age structure, sex ratio, family size, birth rate, age at mortality, mortality rate, etc.), or demographic trends:**

**2.3.1.3 Genetics, genetic variation, or trends in genetic variation (e.g., loss of genetic variation, genetic drift, inbreeding, etc.):**

**2.3.1.4 Taxonomic classification or changes in nomenclature:**

**2.3.1.5 Spatial distribution, trends in spatial distribution (e.g. increasingly fragmented, increased numbers of corridors, etc.), or historic range (e.g. corrections to the historical range, change in distribution of the species' within its historic range, etc.):**

**2.3.1.6 Habitat or ecosystem conditions (e.g., amount, distribution, and suitability of the habitat or ecosystem):**

**2.3.1.7 Other:**

**2.3.2 Five-Factor Analysis (threats, conservation measures, and regulatory mechanisms)**

**2.3.2.1 Present or threatened destruction, modification or curtailment of its habitat or range:**

**2.3.2.2 Overutilization for commercial, recreational, scientific, or educational purposes:**

**2.3.2.3 Disease or predation:**

**2.3.2.4 Inadequacy of existing regulatory mechanisms:**

**2.3.2.5 Other natural or manmade factors affecting its continued existence:**

## **2.4 Synthesis**

The historical distribution of *Cyanea macrostegia* ssp. *gibsonii* included a number of sites between 915 and 3,450 feet (290 and 1,050 meters) elevation on Lanai, but currently is known from only two sites at Hauola Gulch and Waiopae Gulch. Currently, a total of ten to 20 (if the Kunoa population, last visited in 1991, is still extant) mature individuals and four seedlings are known to exist in the three populations (Wagner *et al.* 1999; Hawaii Biodiversity and Mapping Program 2005; Perlman 2006; Wood 2000 and 2006).

*Cyanea macrostegia* ssp. *gibsonii* was originally described as *Cyanea gibsonii* by Hillebrand (Wagner *et al.* 1999). Lammers originally treated it as a subspecies of *Cyanea macrostegia*, which also occurs on Maui, and that is how it was treated by Lammers (1999). However, the latest treatment by Lammers resurrected the

original name (T. Lammers, University of Wisconsin Oshkosh, pers. comm., 2006).

The most recent observations indicate a decline in the number of mature individuals and many plants had been decapitated and stripped of bark by rats and slugs (Factor B). In addition, deer are probably browsing on the plants and disturbing the habitat (Factors A, C, and D) (National Tropical Botanical Garden 2006a). The main threats, invasive introduced plant species (Factor E), deer damage to plants and habitat (Factors A, C, and D), and predation by rats and slugs (Factor C) continue to occur and the low number of individuals left in the wild makes the species vulnerable to stochastic events, such as hurricanes and landslides (Factor E) (Perlman 2000; Wood 2000; Tangalin 2006). In addition, *Cyanea gibsonii* has not been propagated although seeds have been collected from the wild (Harold L. Lyon Arboretum Micropropagation Laboratory 2006; National Tropical Botanical Garden 2006b).

The stabilization and recovery goals for this species have not been met, as only 20 mature individuals currently exist. Therefore, *Cyanea gibsonii* meets the definition of endangered as it remains in danger of extinction throughout its range.

### 3.0 RESULTS

#### 3.1 Recommended Classification:

Downlist to Threatened

Uplist to Endangered

Delist

*Extinction*

*Recovery*

*Original data for classification in error*

No change is needed

#### 3.2 New Recovery Priority Number: N/A

**Brief Rationale:**

#### 3.3 Listing and Reclassification Priority Number: N/A

**Reclassification (from Threatened to Endangered) Priority Number:** \_\_\_\_\_

**Reclassification (from Endangered to Threatened) Priority Number:** \_\_\_\_\_

**Delisting (regardless of current classification) Priority Number:** \_\_\_\_\_

**Brief Rationale:**

#### 4.0 RECOMMENDATIONS FOR FUTURE ACTIONS

- Collect seeds for genetic storage.
- Determine how to propagate this species and collect for genetic storage.
- Fence the remaining populations.
- Control rats and slugs at the remaining populations.
- Should plant material of this species become available, reintroduce into the Awehi enclosure and other protected areas within suitable habitat.
- Survey for additional populations.
- Update the listed entity on 50 CFR 17 to match the currently recognized taxonomy.

#### 5.0 REFERENCES

- Harold L. Lyon Arboretum Micropropagation Laboratory. 2006. Report on controlled propagation of species, as designated under the U.S. Endangered Species Act. Unpublished.
- Hawaii Biodiversity and Mapping Program. 2005. Program Database. Unpublished.
- Lammers, T.G. 1999. Campanulaceae (Bellflower family). Pages 420-489 in Wagner, W.L., D.R. Herbst, and S.H. Sohmer (editors), Manual of the flowering plants of Hawai'i, Revised Edition. University of Hawai'i Press, Bishop Museum Press, Special Publication. 97: 1-1918.
- National Tropical Botanical Garden. 2006a. Database query for *Cyanea gibsonii* localities. September 29, 2006. Unpublished.
- National Tropical Botanical Garden. 2006b. Report on controlled propagation of listed and candidate species, as designed under the U.S. Endangered Species Act. Unpublished
- Perlman, S. 2006. Field notes for April 29-30, 1991, February 12, 1997, May 13, 1999, April 16, 2004, December 2, 2004, February 23, 2005, June 22, 2005, and January 25, 2006. Unpublished.
- [USFWS] U.S. Fish and Wildlife Service. 2003. Endangered and threatened wildlife and plants; final designation of critical habitat for three plant species from the island of Lanai, HI. Federal Register 68(6):1220-1274.
- [USFWS] U.S. Fish and Wildlife Service. 1994. Lana'i plant cluster recovery plan. U.S. Fish and Wildlife Service, Portland, OR, 138 pages.

[USFWS] U. S. Fish and Wildlife Service. 1991. Endangered and threatened wildlife and plants; determination of endangered status for six plants from the island of Lanai, Hawaii. Federal Register 56(183):47686-47695.

Wood, K. 2000. National Tropical Botanical Garden, Field notes, December 16, 2000. Unpublished.

Wood, K. 2006. National Tropical Botanical Garden, Field notes, August 15 and 17, 2006. Unpublished.

**Personal Communications:**

Lammers, T.G. Associate Professor and Curator of the Herbarium, Department of Biology and Microbiology, University of Wisconsin Oshkosh, Oshkosh, Wisconsin. E-mail to Steve Perlman, National Tropical Botanical Garden, July 31, 2006.

**Signature Page**  
**U.S. FISH AND WILDLIFE SERVICE**  
**5-YEAR REVIEW of *Cyanea macrostegia* ssp. *gibsonii***

**Current Classification:**   E  

**Recommendation resulting from the 5-Year Review:**

- Downlist to Threatened
- Uplist to Endangered
- Delist
- No change needed

**Appropriate Listing/Reclassification Priority Number, if applicable:** \_\_\_\_\_

**Review Conducted By:**

Marilet A. Zablan, Recovery Program Leader and Acting Assistant Field Supervisor for Endangered Species, June 24, 2007

Marie Bruegmann, Plant Recovery Coordinator, March 26, May 24, and June 28, 2007

Annie P. Marshall, Fish and Wildlife Service Biologist, February 8, 2007

Approve  Date 1/18/08  
**Lead Field Supervisor, Fish and Wildlife Service**